

**DESIGN AND ANALYSIS OF MICROSTRIP PATCH ARRAY ANTENNA  
FOR HIGH GAIN WIFI APPLICATIONS**

*A project report submitted in the partial fulfillment of the requirements for the award of degree  
of*

**BACHELOR OF TECHNOLOGY  
IN  
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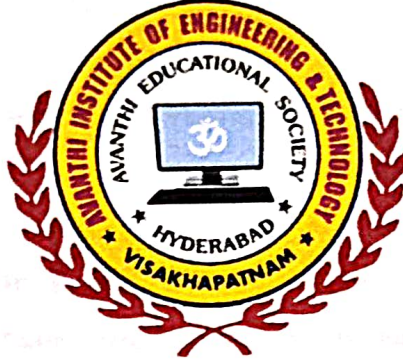
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**CERTIFICATE**

This is to certify that the project work entitled "**DESIGN AND ANALYSIS MICROSTRIP PATCH ARRAY ANTENNA FOR HIGH GAIN WI-FI APPLICATIONS**" is being submitted for the partial fulfillment of requirements for the award of Bachelor of Technology of in Electronics & Communication Engineering is a bona-fide work done by **A.HEMA KIRAN (20811A0401)**, **A.R.JUSTINA (20811A0404)**, **B.SIRISHA (20811A0409)**, **B. SHYAM (20811A0422)** under guidance during year 2023–2024 and it has been found suitable for acceptance according to the requirements of the University.

**INTERNAL GUIDE**

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## ABSTRACT

Microstrip patch antenna arrays play important role in aircraft, spacecraft and missile applications because of their lighter weight, low volume, low cost, low profile, smaller in dimensions besides easy installation and aerodynamic profile are constrains. This project presents a single and 2x2 Microstrip Patch array antenna of rectangular topology is designed to operate at S Band. The operating frequency of array is from 2 to 4 GHz. The antenna array has been designed and simulated using HFSS. The array antenna design at operating frequency 2.4 GHz, FR4 Substrate with dielectric constant of 4.4 and thickness of substrate 1.6mm. The designed antenna provides a return loss less than  $-10$  dB and high gain 7.44 dB. The antenna performance using normal patch and with slits on patch are also compared in terms of Return loss, VSWR, Gain are measured to finalize the antenna design.

The resonant frequency is chosen at 2.4GHz which is suitable for High Gain Wi-fi Application. HFSS is used to the software environment to design and compare the performance of the antennas. Based on the result analysis, it is noted that slit on rectangular patch array antenna offers higher bandwidth, higher radiation efficiency and directivity as compared with the rectangular Microstrip patch antenna shows smaller than the return loss of corporate feed rectangular patch array.

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